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# FLOODPLAIN MANAGEMENT RECONNAISSANCE STUDY REPORT

## ELCO ALEXANDER COUNTY



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VILLAGE OF ELCO

ALEXANDER COUNTY, ILLINOIS

FLOODPLAIN MANAGEMENT

RECONNAISSANCE STUDY

Prepared By

U.S. Department of Agriculture

Soil Conservation Service

Champaign, Illinois

In cooperation with

STATE OF ILLINOIS

Department of Transportation

Division of Water Resources

June 1984

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VILLAGE OF ELCO  
RECONNAISSANCE STUDY

INTRODUCTION

Use of floodprone areas can be a severe problem in Illinois. Urbanization and floodplain encroachment are increasing the severity of this problem. Over 800 communities in Illinois have been identified as having flooding problems.

The Illinois Division of Water Resources (DWR) is the responsible state agency for urban flood control and for setting priorities of flood studies within urban areas. The Soil Conservation Service is providing assistance to the Division of Water Resources in setting these priorities. A joint coordination agreement was executed between the Division of Water Resources, State of Illinois, and the USDA, Soil Conservation Service on April 30, 1976 and revised in December 1978 to furnish technical assistance in carrying out Flood Hazard Studies. These studies are carried out in accordance with Federal Level Recommendation 3 of "A Unified National Program for Flood Plain Management," and under Section 6 of Public Law 83-566. A plan of study was executed in October 1983 for reconnaissance studies for 15 Illinois communities. These reconnaissance studies will utilize existing floodplain information, historical high water profiles, and the 100 year floodplain from flood insurance studies when available. Average annual damages are estimated for the structures within the floodplain.

This study was conducted and the report provided for the purposes of: 1) To evaluate needs for additional future studies, 2) to estimate average annual



damages, 3) to provide an updated estimate of the 100 year floodplain and map, and 4) to provide guidance and recommendations to the community for improved floodplain management.



### STUDY AREA DESCRIPTION

The village of Elco is located in Alexander County. Elco is 11 miles south of Jonesboro and 20 miles north of Cairo on Illinois State Highway #127. The estimated population is 150 to 180. It is an unincorporated village at the edge of the Shawnee National Forest.

It is served by the above mentioned state highway and many winding blacktop roads connect it to other small towns. It is approximately 12 miles to an exit-entrance to Interstate #57. The Illinois Central Gulf Railroad line serves Elco from the south. The tracks north of the village have been removed.

Mining is a big interest in this part of the state. Illinois Mineral Company has a large plant and warehouse at the northeast edge of the village, processing silica.

The main drainage problems are caused by Hartline Creek and an unnamed tributary. Hartline Creek has a drainage area of 5 square miles, including the drainage from the unnamed tributary. The unnamed tributary has a drainage area of 2.25 square miles, before it joins Hartline Creek at the northeast part of the village. The drainage areas are relatively small, but the steep slopes at the top of the drainageways cause the runoff to be accelerated.

A large part of the drainage area is in heavy timber, with roads and drainageways both narrow and winding. Small isolated fields are used for pasture and some degree of cultivation. The bottomland areas are cultivated with corn and soybeans as the main crops.



The main upland soils are Bodine, Stookey-Bodine complex, and Alford silt loams that contain many rocks or chert. There is very little top soil actually remaining on these highly erosive soils that range from 18 to 60 percent slope. Most of these areas are in native timber, with a small amount of wooded pastures. The drainageways for these uplands is Elsayh silt loam, which is subject to stream erosion.

The bottomland soil is Wakeland silt loam which also contains chert pebbles. It is well suited to crops or woodlands and its major problems are caused by overflow and streambank cutting. This is the major flood plain soil in the drainage basin. The soils information is from the soil survey for Pulaski and Alexander Counties.

The drainage basin is in the Mississippi River Basin, hydrologic unit #07140108, Hartline Creek subwatershed #030. The average rainfall for the area is 45 inches, but has ranged from 30 to 70 inches. The very steep slopes along with the large amount of rainfall and rapid runoff causes the upland soils to erode causing stream channel deposition.

The small drainageways as well as the main drainage channels are usually heavily tree lined. The combination of trees and heavy underbrush along and in the channels, causes many flow restrictions of the water courses.





## NATURAL VALUES

The village of Elco is located in an area of the state that is characterized by an interspersion of various land uses. Except for the bottomlands, crop fields are very small in size on the gently to steeply sloping uplands with many scattered pastures, wooded pastures and native timber. The very steep slopes are nearly always left in native timber and pasture. The upland drainageways are very steep and tree lined with many trees across or in the drainageways. They provide a large amount of varying quality riparian habitat as well as important travel routes for wildlife.

The interspersed land use and associated types of habitat result in an outstanding diversity which supports a wide range of plant and animal species. The wide variety of plant and animal species present generally make the area a pleasant place for people to live, work, and play.



## FLOOD PROBLEMS

Flooding along Hartline Creek and the unnamed tributary is generally the result of local, heavy rainfalls and could occur during any part of the year. Due to the unusually small amount of snowfall in this area, snowmelt is generally not a contributing factor to flooding. Since most of the flooding is due to heavy local rainfalls over relatively small watersheds, flooding is generally of short durations.

The outlet below the village is also heavily lined with trees, brush, and debris. At a point below the village where another stream joins Hartline Creek, a levee keeps water off of the adjoining farmland. This levee is approximately 4 feet high and protects approximately 80 to 100 acres of the flood plain. To some degree, this causes the water to "back up" towards Elco. On the west side of State Route #127, a reservoir has been constructed to control the runoff of 35 acres from draining into the original flood plain. Its controlled outlet goes into Hartline Creek, and not into the farmland that the levee protects.

Most of the drainage area above Elco is pasture or heavy timber with some small cultivated fields. Most of the timber belongs to the Shawnee National Forest. This is very steep land, up to 60 percent slopes, with very little top soil remaining. The small draws can quickly become gullies with the large amount of rainfall and rapid runoff rates. This is loess soils formed over "chert," which is a rocky substance. Chert is also associated with Silica.

Some very small open mine "digs" have caused some problems. These test holes or areas are left on the side of the hills with vertical banks that wash the



soil and gravely loam into the small drainageways. This, in turn, causes many sand or gravel bars to impede the flowline of the ditches, which already have problems with heavy timber, brush, and debris lining many of the channels. Along with these problems, the drainageways are fairly narrow and winding.

There are 3 or 4 fairly new bridges in and around Elco. The bridge at the north side of Illinois Mineral Company was raised 4 feet with little or no more capacity than the old bridge, according to local residents. The local residents are also concerned with gravel bars and the debris in the ditches. They do not feel the ditches have the capacities that they had in the past.

According to the local residents, as much as 500-600 acres of timber have been removed and converted to cropland in the watershed. Some of the existing woodland pastures have been overgrazed which, in turn, increases the runoff and accelerates the erosion process. These pastures must be managed with care, since they are on steep land with soils that are highly erosive.

Restrictions to flood waters do occur at the various gravel roads, railroads, and blacktop roads that cross the streams. The agriculture levee downstream of Elco appears to be restricting flood flows according to local residents. Also, the rapid runoff from the steep slopes into a relatively flat area by the village may be causing some of the problems.

New home construction in Elco is not a problem as there has been very little new development in the village. Growth potential is limited, and population is expected to remain about the same or decrease slightly in the foreseeable future.

1. The first part of the document is a letter from the President of the United States to the Congress, dated January 3, 1801. It is a very important document, as it contains the President's first message to the Congress. The letter is written in a very formal and dignified style, and it is one of the most important documents in the history of the United States.

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In 1973, most of the village of Elco was flooded. Approximately 10 inches of rain, according to local residents, fell during the storm. During a 1 percent chance (100 year) storm, most of Elco, except for the very southern part, would be covered by approximately one to four feet of flood water, causing many wells to be possibly contaminated.





### PROBLEM SUMMARY

Since most of Elco is located in the 100 year floodplain, extensive damages will occur in the community. The following are in the 100 year floodplain.

<u>Number</u>	<u>Total Value</u>	<u>Average Annual Damage</u>
41 Homes		\$ 8,900
9 Mobile Homes		700
1 Mobile Camper		100
14 Garages or Sheds		600
2 Churches		1,400
5 Businesses		2,800
1 Industry		<u>2,000</u>
TOTAL	\$1,949,000	\$16,500

Yard damages and repair of septic systems	\$ 2,900
Street repairs	<u>1,600</u>

Total estimated average annual damages for Elco = \$21,000

Average home values are estimated to be \$15,000.

Flooding starts at the 2 year frequency.

### EXISTING FLOODPLAIN MANAGEMENT

Elco is an unincorporated village. Since Alexander County has participated in the Emergency phase of the National Flood Insurance Program for the unincorporated areas of the county since June 6, 1974; county ordinances will regulate new construction and remodeling.

- 1) The county does require building permits. They have zoning ordinances in effect.
- 2) Emergency flood insurance is available to businesses and homeowners.



### RECOMMENDATIONS

- 1) Local citizens presently watch for high floodwater and should continue these observations. The village should develop an emergency action plan with the county ESOA (Emergency Services Disaster Agency) assuming the leadership.
- 2) Elco should continue to use the county ordinances for the regulation of construction. These would prohibit the construction of most excavated crawl spaces, one-half, and full basements in the portion of the village subject to flooding.
- 3) Existing septic systems must be kept in good working order. Poorly functioning systems will cause standing ponded water that is stale and foul smelling for the homeowners, neighbors, children, and increase the mosquito problem. Since almost all of the area is in the 100 year floodplain, the septic systems will not function properly during periods of high water. The high ground water table will also cause problems for the septic systems. In addition to the poor drainage for the septic systems, this in turn creates a health hazard for the entire village.
- 4) The mine "digs" or test holes should be filled and revegetated as close as possible to their original condition. This will help reduce the amount of soil and gravelly loam that is presently entering the drainageways.



5) It would be advisable for the village to make provisions for spraying to control the mosquito problem. This type of high breeding habitat for mosquitos will have to be watched and action taken when necessary to control a problem that could be potentially dangerous.

6) The drainageways in and below the village should be kept as free as possible from gravel bars, brush, and debris. At times, the channels may need maintenance to preserve their flow capacities.

7) The two churches that are subject to flooding can correct their problems fairly easy. The Methodist church can get water into the basement from a low entrance. This entrance could be changed or flood proofed to correct the problem. The Baptist church has a problem with the outside central air conditioning unit being subject to floodwaters. This could be solved by either raising the unit or by constructing a small berm around the unit.

8) After each flooding event, water from existing wells should be tested to be sure it is safe for consumption.

9) Existing pastures should not be over-grazed. Farm operators should check with the local Soil and Water Conservation District for information on proper pasture management procedures. A properly managed pasture will promote more rapid growth and help slow down the surface water runoff.

10) The State of Illinois may want to do an additional study to evaluate the effects of other alternatives, reduced restrictions of bridges and roads, and a possible reservoir upstream of Elco.



### INVESTIGATION AND ANALYSIS

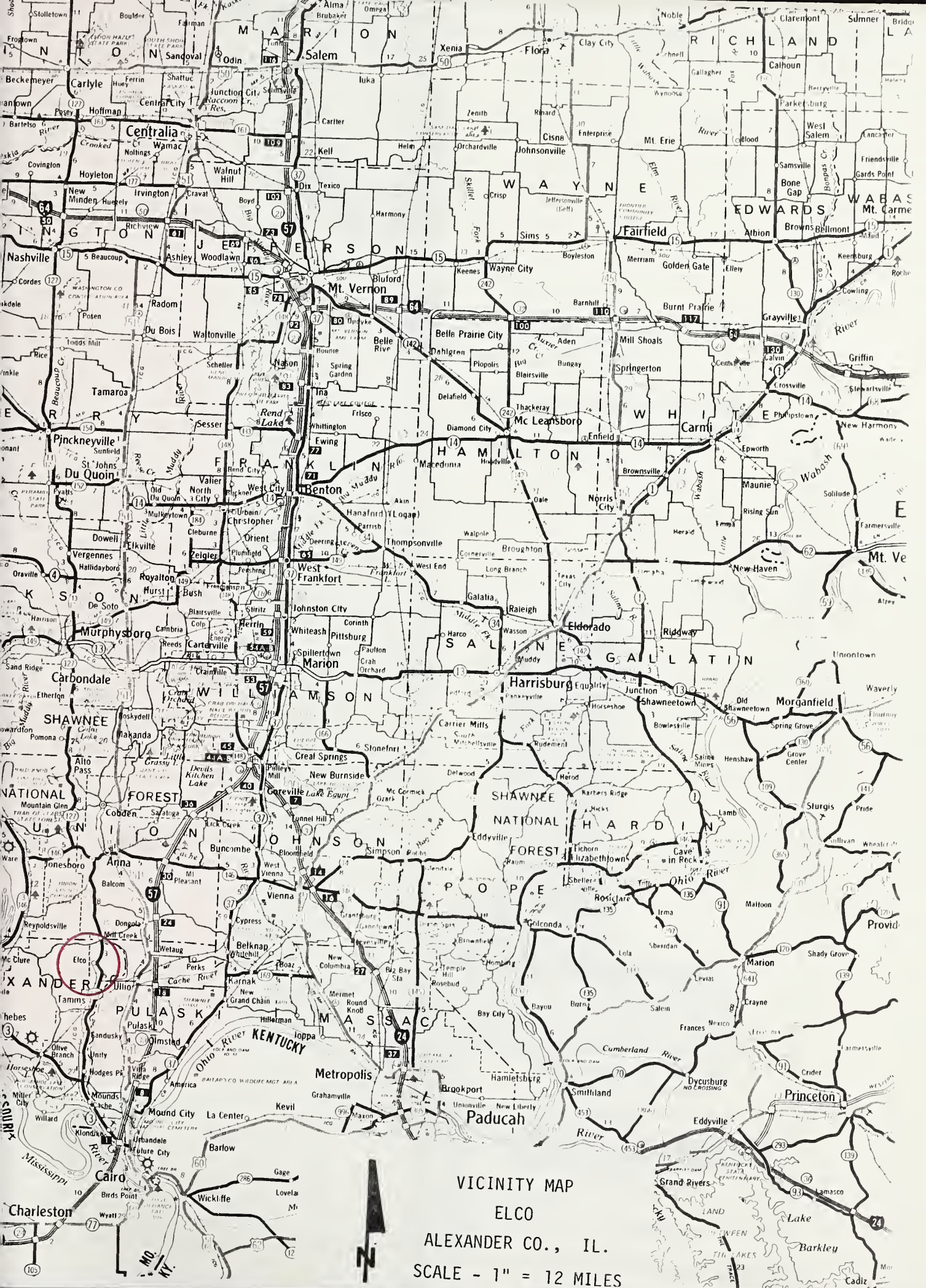
The 100 year floodplain was determined by interviews, field review, topography maps, and the 1974 Flood Hazard Boundary Map for the unincorporated areas of Alexander County.

The inventory of flooding and water problems is based on a field review and interviews with local citizens. Damages were based on property value estimates during field review, and the application of damage factors. These factors came from previous detailed floodplain management studies. Aerial photographs were provided by the Division of Water Resources.

RGS:tsb:WRAA:7







VICINITY MAP

ELCO

ALEXANDER CO., IL.

SCALE - 1" = 12 MILES



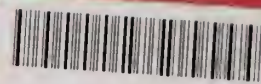








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